Advanced Dynamics
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Lecture - 43
Kinematics of Rotation - III

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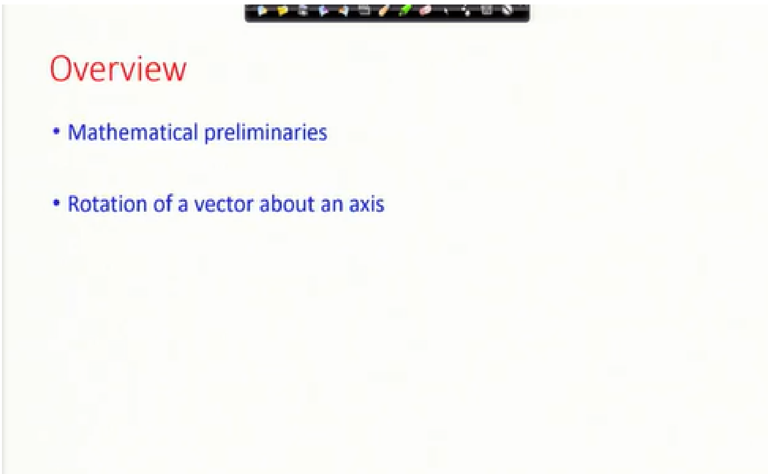

We are going to continue our discussions on the rotation kinematics of rotation. And in this lecture, I am going to talk about few mathematical preliminaries that will be required to understand our further developments. And I am going to discuss the situation of rotation of a vector about an axis.

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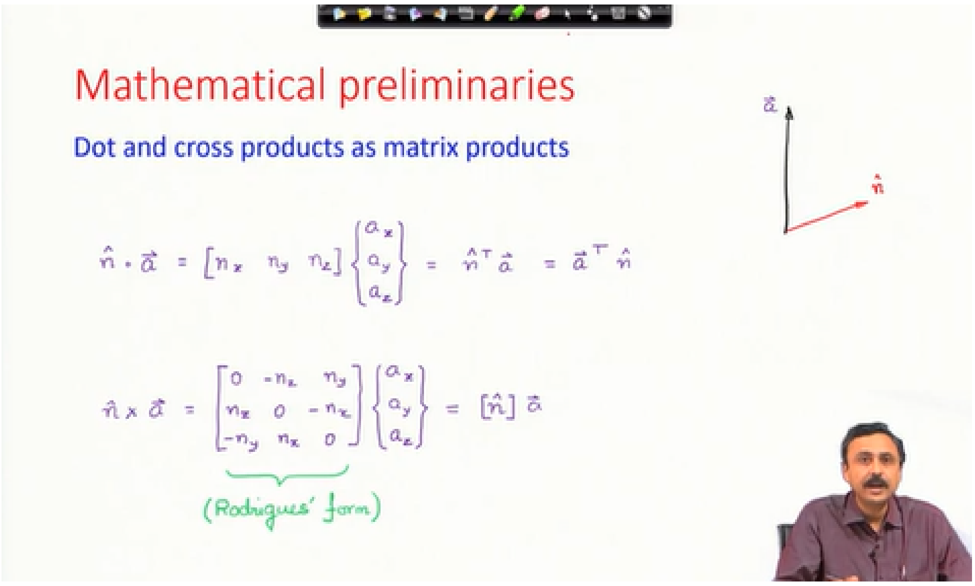

First, I will develop the dot and cross product the standard vector products as matrix products. This is shown in the slide above.

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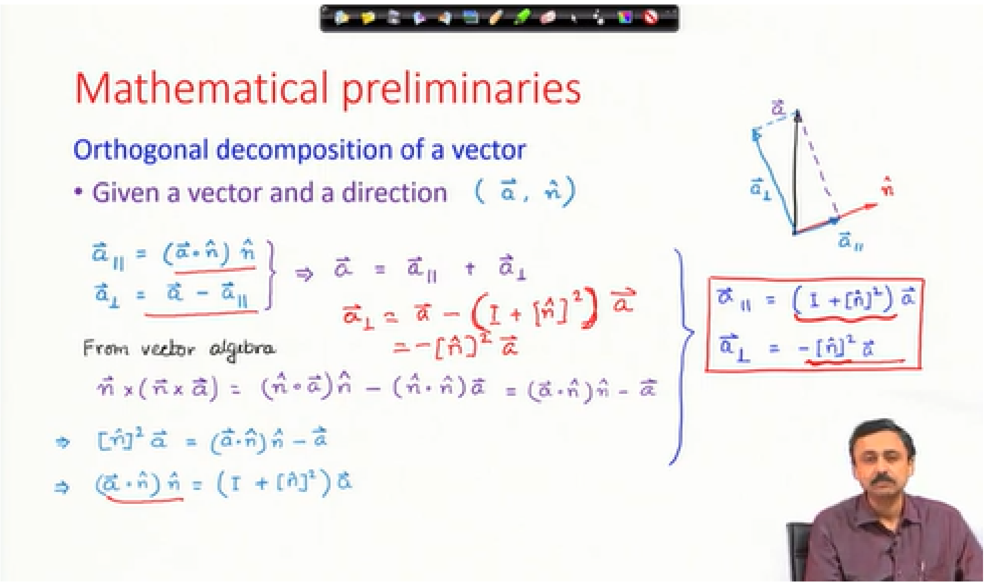
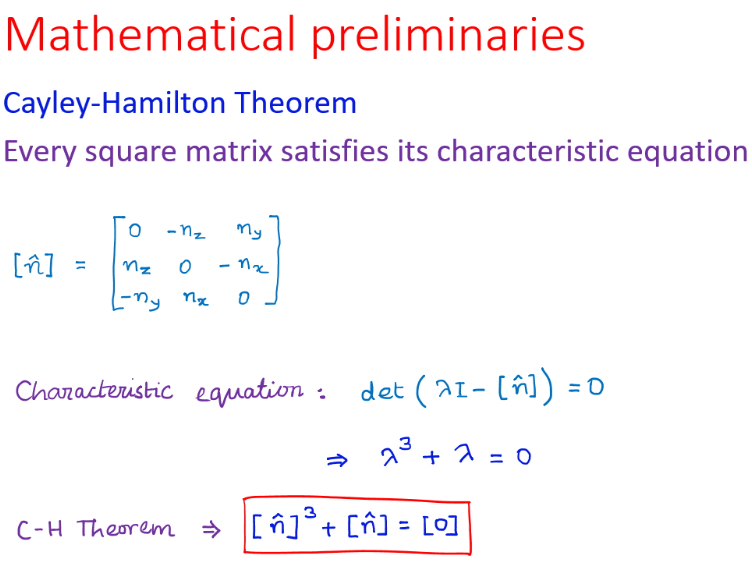


Now we are going to look at orthogonal decomposition of a vector. This is presented in the above slide.



The above slide presents the Cayley-Hamilton theorem.

Next, we determine the rotation matrix involved when we give a rotation about an arbitrary direction. This is presented in the next two slides.

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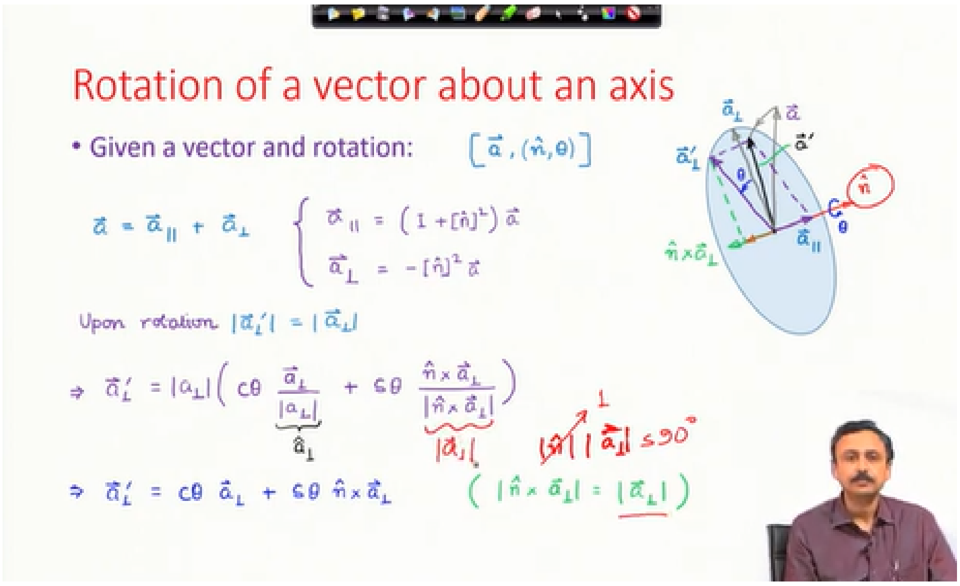

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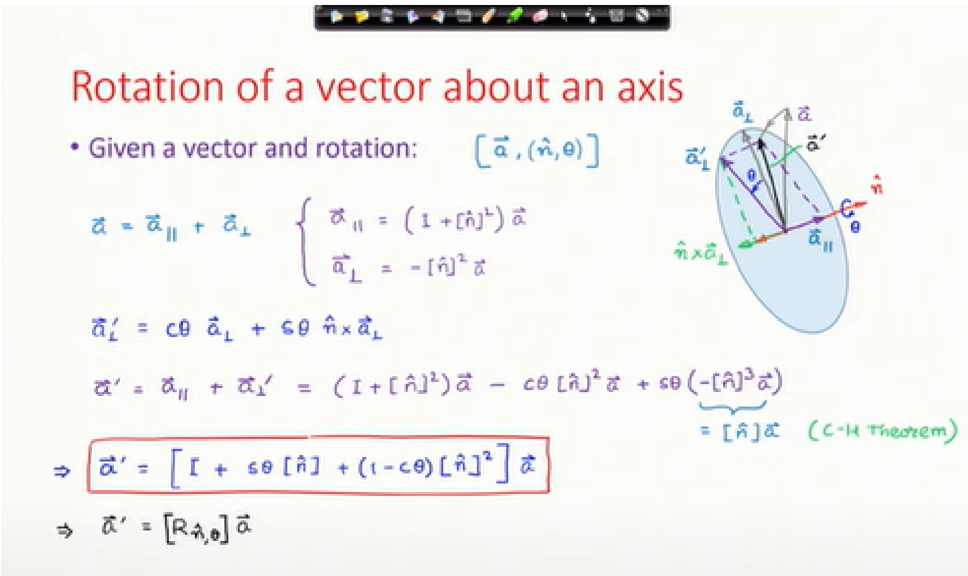

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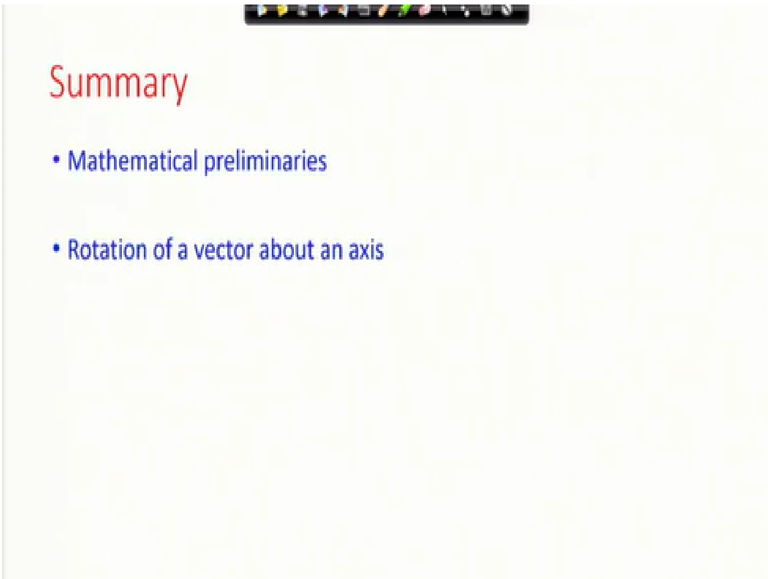

The above slide presents the summary.